REMARKS

Claims 1-21 are currently pending. In an Office Action dated July 2, 2007, claims 1-21 were rejected. Applicants thank the Examiner for carefully considering the present application.

By way of this Amendment and Response, claims 1, 8-11, 16, and 21 have been amended, and claims 7 and 19 have been cancelled. No claim is added.

Objections To Drawings

The Office Action Summary indicates that the drawings filed on July 3, 2003 are objected to by the Examiner. However, the Detailed Action does not specify any reason for the objection.

Applicants note that a Notice to File Missing Parts of Nonprovisional Application dated October 1, 2003 required Applicants to submit replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.21. Applicants subsequently submitted replacement drawings for FIGS. 5 and 6 together with a response to the Notice on November 25, 2003.

Applicants respectfully request the Examiner withdraw the objection, or alternatively, specify grounds of the objection.

Response to Rejection Under 35 USC 103(a) in View of Nakayama and RFC 3031

In the 2nd paragraph of the Office Action, the Examiner rejected claims 1-21 under 35 USC § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,907,001

("Nakayama") in view of "MPLS Architecture" by Rosen, IETF RFC 3031, January 2001 ("RFC 3031"). This rejection is now traversed.

Independent claim 1 as amended recites a method for processing a packet in a multi-slice network processor system. The method recites, among other limitations, "delivering one or more cells of the packet to one or more processing slice modules based upon load balancing criteria; storing one or more cells in a buffer in the packet slice; and generating a buffer correlation data structure correlating the buffer of the packet slice." The above claimed feature can improve the performance of the multi-slice network processor system. Independent 16 as amended recites similar limitations.

Nakayama and FRC 3031, either alone or in combination, fail to disclose this claimed feature. Nakayama discloses a packet switch that converts received variable length packets to fixed length cells, switches the cells, restores the cells back to the variable length packets, and sends out the restored variable length packets. See Nakayama, Abstract. Different from the claimed invention, Nakayama's switch writes cells into "a plurality of cell queues in the input buffer memory 15 according to the output line number and service class of the ATM cell header." See Nakayama, col. 7, lines 33-39, and col. 15, lines 42-47. Both the output line number and the service class of ATM cells are specified in the header of the received packet. See Nakayama, claim 1 (output line is specified in header information of the packet) and col. 7, lines 12-14 (the service class is specified with the TOS field of the IP header). Therefore, Nakayama teaches placing ATM cells in cell queues predetermined by associated packets, and is totally silent as to delivering cells to processing slice modules based upon load balancing criteria. Thus, the Nakayama system fails to teach "delivering one or more cells of the packet to one or more processing slice modules based upon load balancing criteria."

RFC 3031 also fails to disclose the above cited element. RFC 3031 specifies an Internet standards track protocol. See RFC 3031, page 1. RFC 3031 discloses that it is desirable to do load balancing over multiple equal-cost paths when routing a packet by a label switch routers. See RFC 3031, sections 3.11 and 3.12. However, cells as claimed in claim 1 are different from packets (data of a packet is segmented into cells). In addition, cells of a packet may be delivered to different processing slice modules in the claimed invention, while data of a packet are always routed to a same label switch routers in RFC 3031. Load balancing among routers is not the same as load balancing among processing slice modules within a multi-slice network processor system. Thus, RFC 3031 also fails to teach "delivering one or more cells of the packet to one or more processing slice modules based upon load balancing criteria."

Likewise, the combination of Nakayama and RFC 3031 also fails to disclose or suggest the claimed features cited above. As discussed above, the above claimed feature is not disclosed in either reference. However, even if the two references were combined, at best the combination provides a system and method for switching packets by converting them into fixed length cells, and for routing the packets over multiple equal-cost paths by conducting load balancing. This is not what Applicants claim. This is not a configuration in which a packet is segmented into cells and the cells are delivered to one or more processing slice modules based upon load balancing criteria.

Aspects of independent claim 1 related to storing one or more cells in a buffer in the packet slice and generating a buffer correlation data structure correlating the buffer of the packet slice were previously recited by claim 7, which were rejected as obvious over Nakayama, RFC 3031, and official notice. The Examiner took official notice that using

data structure such as link list and tree to present a group of cells/packets is well known to a person skilled in the art.

Applicants respectfully traverse this official notice. Assertions of technical facts in areas of esoteric technology or specific knowledge of the prior art must be supported by a citation to some reference work recognized as standard in the pertinent art. In re Ahlert, 424 F.2d 1088, 1091 (CCPA 1970), MPEP 2144.03 A. Whether it is well known to generate correlation data structure correlating buffers of packet slice is an area of esoteric technology, and is not capable of instant and unquestionable demonstration as being well-known. Accordingly, Applicants respectfully request that the Examiner provide documentary evidence supporting this rejection.

In view of the above, Nakayama and RFC 3031, whether considered individually or in combination, fail to disclose each and every limitation recited in amended independent claims 1 and 16. Thus, independent claims 1 and 16 are patentable over Nakayama and RFC 3031. Dependent claims 2-6, 8-15, 17, 18, 20, and 21 are allowable for at least the same reasons.

In addition, claim 5 stands rejected as obvious over Nakayama and RFC 3031. Claim 5 recites a feature of "delivering body data of the packet to one or more of the processing slices ahead of the header data of the packet." Therefore, the claimed invention may deliver data of a packet out of sequence.

The Examiner cited col. 8, lines 47-48 of Nakayama for support of the rejection of claim 5. However, the cited section merely suggested that priority cells and non-priority cells destined for the same output port are stored in a mixed state in one cell queue and are read out in FIFO fashion in their arrival sequence. Because in Nakayama cells gen-

erated from the same packet are stored in the cell queue in sequence (see Nakayama, col. 7, lines 19-39), cells containing body data of a packet in Nakayama will not be delivered ahead of cells containing header data of the packet. In addition, RFC 3031 is totally silent as to delivering body data of a packet to a processing slice ahead of header data of the packet. Therefore, Nakayama and RFC 3031, whether considered individually or in combination, fail to disclose each and every limitation recited in claim 5.

Claim 9 stands rejected as obvious over Nakayama, RFC 3031, and official notice. Claim 9 recites "maintaining an independent set of upper bits of a sequence number for each communication flow; and responsive to detecting one of the processing slices delivering a sequence number that is smaller in value than an immediately preceding sequence value for the same slice, incrementing the independent set of upper bits for the respective communication flow, concatenating the set of upper bits with a set of bits of the sequence number into an index, indexing into a re-sequencing buffer space of sufficient depth to cover a slice-to-slice skew case based on the index, and resequencing the packet into its sequence order position." The Examiner took official notice that using large enough sequence number to present maximum number of sequence and using minimum bits to present a sequence number in order to save precious space in header of the packet/cell is well known in the art.

Applicants respectfully submit that whether it is well known to respond to detecting one of processing slices delivering a sequence number that is smaller in value than an immediately preceding sequence value for the same slice by incrementing the independent set of upper bits for the respective communication flow, concatenating the set of upper bits with a set of bits of the sequence number into an index, indexing into a re-sequencing buffer space of sufficient depth to cover a slice-to-slice skew case based on

the index, and resequencing the packet into its sequence order position is an area of esoteric technology, and is not capable of instant and unquestionable demonstration as being well-known. Accordingly, Applicants respectfully request that the Examiner provide documentary evidence supporting this rejection.

Similar to claim 9, claim 10 stands rejected as obvious over Nakayama, RFC 3031, and official notice. Claim 10 recites "generating a slice correlation data structure for the packet including a packet reference pointing to the buffer of the packet slice including the first cell of the packet, and a respective buffer indicator for the buffer in each packet slice storing the first cell in the slice for the packet; and entering the slice correlation data structure as a single queue entry into a queue." The Examiner took official notice that using a double link list data structure to present a packet is well known in the art.

Applicants respectfully submit that whether it is well known to generate a slice correlation data structure for the packet including a packet reference pointing to the buffer of the packet slice including the first cell of the packet, and a respective buffer indicator for the buffer in each packet slice storing the first cell in the slice for the packet is an area of esoteric technology, and is not capable of instant and unquestionable demonstration as being well-known. Accordingly, Applicants respectfully request that the Examiner provide documentary evidence supporting this rejection.

Therefore, withdrawal of the § 103 rejections is respectfully requested.

Conclusion

In sum, Applicants respectfully submit that claims 1-6, 8-18, 20, and 21, as presented herein, are patentably distinguishable over the cited references. Therefore, Applicants request reconsideration of the basis for the rejections to these claims and request allowance of them.

Should the Examiner wish to discuss the above amendments or if the Examiner believes that for any reason direct contact with Applicants' representative would help to advance the prosecution of this case to finality, the Examiner is invited to telephone the undersigned at the number given below.

Respectfully submitted,
Harish R. Devanagondi, et al.

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By: /Jie Zhang/
Jie Zhang, Reg. No. 60,242
Fenwick & West LLP
801 California Street
Mountain View, CA 94041
Phone: (650) 335-7194
Fax: (650) 938-5200